



The Art of Exploration

EXTRAORDINARY EXPLORERS AND CREATORS INSPIRE US ALL TO REACH OUR OWN POTENTIAL



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Jane Poynter Bioneer Living in the Future

Jane Poynter, explorer, author, Biospherian and President of Paragon Space Development Corporation, an aerospace firm that designs environments for extreme situations, is engaged in laying the groundwork for human space settlement. Founding Paragon grew out of her experience as a Biospherian, one of eight individuals chosen to live sealed for two years inside Biosphere 2, a bubble in Arizona, to learn if it was possible to replicate earth environments beyond earth.

For two years Jane Poynter lived with seven other men and women, enclosed in Biosphere 2, a bubble of glass and concrete perched on the Arizona desert. They were part of an experiment to see if they could recreate an earth like environment that would sustain humans. This means the environment inside Biosphere 2 had to produce all the food, water and oxygen for the eight people to survive. Biosphere 2 was one of the first experiments testing the possibilities for human settlement in space. What the biospherians learned is vitally important for future plans to return to the moon or for astronauts to journey to Mars.

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Biosphere - The place on earth's surface where life dwells.

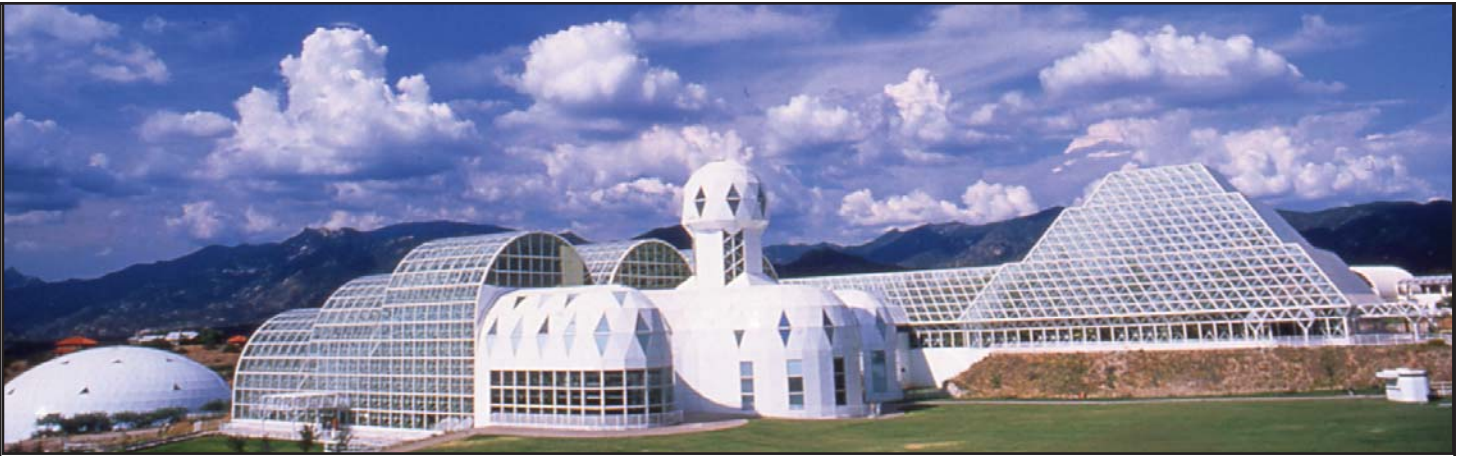
Eduard Suess 1875

Jane Poynter grew up in the English countryside surrounded by nature. She had an experience when she was young that foreshadowed her future in Biosphere. "When I was eight, my parents bought a large house with a cottage on the grounds where an elderly woman lived. When I first visited her, I was astonished to see in her dark tiny cottage a bunch of wild birds sitting on her bedpost. That she allowed nature inside her house made a huge impression on me. In my house nature was outside. She impressed on me that we are part of nature." When Jane was in her twenties and living in London she happened one day to visit a gallery that had a number of images of "far away places with people doing amazing things like sailing around the world studying reefs." She found out about the organization conducting those studies and volunteered to go. "Soon I was on a research boat that sailed from Sri Lanka across the Indian Ocean and up the Red Sea studying the nature of marine bacterial ecosystems. I did not know it when I joined, but the boat was part of the training for the Biosphere." She learned to live in isolation for long stretches of time. Later she lived on a remote cattle station in the Australian Outback – another biospherian training ground – "where I learned about animal care, which would eventually become one of my jobs in Biosphere 2.

One of the problems in Biosphere 2 was oxygen. "Biosphere was sealed", Poynter says, "so we had not only to grow our own food, recycle all our wastes but also make our own oxygen. We were astronauts without having to go into space. Everything we learned we hoped would inform the future space base on Mars because two years is about the time for a round trip to Mars."



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What Poynter remembers most about her experience was the Bioneers obsession with food. “We knew exactly where it was from, when it was planted and harvested. After our first wheat harvest, I made a pizza. It took four months to make that pizza.”

Now Jane and her husband, Tabor MacCallum also a Biospherian are , designing a space hotel and life support systems for astronauts and Navy deep-sea divers with the company they founded Paragon Space Development Corporation.

“We have to have a complete transformation in the way our society is set up in order to deal with the critical issues generated by climate change and how it impacts our energy supply, our dwellings, our food and our bodies. I am optimistic that we will find new ways and avoid the worst, but it will take a huge effort that we all need to get behind.” Jane Poynter

Biosphere 2

Creating Biosphere 2, scientists and architects had a daunting task. They were trying to create in a series of linked buildings covering a little more than 3 acres in the Arizona desert, Biosphere 1 or The Earth. The planners could not hope to completely recreate Earth because the vast variety of life stretching from deep within the earth to the upper atmosphere and its interconnectivity is still relatively unknown. So the planners had to carefully select what they thought could recreate enough of the earth’s actual biosphere within the artificial biosphere to sustain human life. They created five different habitats: rainforest, ocean, marsh, desert and savannah beginning with the role of bacteria in each zone. They chose what insects to bring in by figuring out what jobs insects did in each ecosystem. They chose insects that pollinated plants, recycled dead organic matter, and insects that eat other insects for pest control. For animals they had several small monkeys (more for company) as well as tortoises, frogs, snakes, insects, fish, lobsters, and corals. They had chickens goats and pigs in a farm area, which they raised for food. They had to learn about organic farming because if they used any fertilizers or pesticides those chemicals would end up in the drinking water and food and affect their health.

“Biosphere 2 taught me how important plants are. The plants I cared for were providing my oxygen and food. I was giving them the CO2 they needed and they were giving me life. Now here in Biosphere 1 – the planetary biosphere – we are finally becoming aware of this critical interdependence that we are citizens of a biosphere that we depend on. That was the most powerful experience of my time in Biosphere 2.” - Jane Poynter

The project identified many areas for scientists to work on in preparation for future space living. One big difficulty is creating and maintaining enough oxygen for life. They learned that if there is not enough light photosynthesis does not produce enough oxygen and plants and animals died. Now the University of Arizona is conducting new experiments in Biosphere 2.



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